


Iranian 240-mm Multiple Rocket Launcher Fadjr-3

	<div>Weapons & Ammunition Types</div> <div>240-mm rocket</div> <div>Frag-HE</div>	<div>Typical Combat Load</div> <div>12</div>
<div>SYSTEM</div> <div>Alternative Designations: INA</div> <div>Date of Introduction: 1996</div> <div>Proliferation: At least 1 country and Hezbollah Units</div> <div>Description:</div> <div>Crew: 5</div> <div>Chassis/Carriage: Mercedes Benz 6x6 wheeled</div> <div>Combat Weight (mt): 15.0</div> <div>Chassis Length Overall (m): 10.45</div> <div>Height Overall (m): 3.34</div> <div>Width Overall (m): 2.54</div> <div>Automotive Performance:</div> <div>Engine Type: 280 hp, V-8 liquid-cooled, diesel engine</div> <div>Cruising Range (km): INA</div> <div>Speed (km/h):</div> <div>Max Road: 60</div> <div>Max Off-Road: 25 (est)</div> <div>Cross-Country: INA</div> <div>Max Swim: N/A</div> <div>Fording Depths (m): INA</div> <div>Emplacement Time (min): INA</div> <div>Displacement Time (min): INA</div> <div>Radio: INA</div> <div>Protection:</div> <div>Armor, Front (mm): None</div> <div>Armor Side (mm): None</div> <div>Armor Roof (mm): None</div> <div>Self-Entrenching Blade: No</div> <div>NBC Protection System: No</div> <div>Smoke Equipment: No</div>	<div>ARMAMENT</div> <div>Launcher:</div> <div>Caliber, Type, Name: 240-mm, Fadjr-3</div> <div>Number of Tubes: 12 (2 rows of 6 tubes)</div> <div>Launch Rate:</div> <div>Full Salvo Time: 12 rounds in 48 seconds (est)</div> <div>Single Rocket Interval: 4 seconds per rocket (est)</div> <div>Loader Type: Transloader, crane hoist</div> <div>Reload Time: 12 to 15 minutes (est)</div> <div>Launcher Drive: Manual</div> <div>Traverse: (°):</div> <div>Left: 90</div> <div>Right: 100</div> <div>Total: 190</div> <div>Elevation (°) (-/+): -0/+57°</div> <div>FIRE CONTROL</div> <div>Indirect Fire: INA</div> <div>Collimator: INA</div> <div>Fire Control Computer: None</div> <div>Position Location System: None</div> <div>VARIANTS</div> <div>None</div> <div>MAIN ARMAMENT AMMUNITION</div> <div>Caliber, Type, Name: 240-mm Frag-HE, Fadjr-3</div> <div>Indirect Fire Range (m):</div> <div>Min Range: INA</div> <div>Max Range: 43,000</div> <div>Warhead Weight (kg): 90</div> <div>Rocket Length: (m): 5.2</div> <div>Maximum Velocity: INA</div> <div>Fuze Type: PD</div> <div>Other Ammunition Types: INA</div>	

NOTES

The system is stabilized by 2 firing jacks mounted on the rear of the vehicle and 2 more located behind the cab. The system has a dedicated resupply vehicle with a crane to assist in reloading. Shahid Bagheri Industries of Iran developed the system with possible technical assistance from North Korea.

OPFOR Special Munitions Chart for Training Simulation

WEAPON	SMOKE (km)	SCATTERABLE MINES (km)	CHEMICAL (km)
122-MM: 2S1 SP, D-30 TOWED HOWITZER	15.3	N/A	15.3
152-MM: 2S3/2S3M SP, D-20 TOWED HOWITZER	17.2	N/A	17.2
152-MM: 2S19 SP, 2A65 TOWED HOWITZER	24.0	N/A	24.0
152-MM: 2S5 SP, 2A36 TOWED GUN	28.4	N/A	28.4
122-MM: BM-21 MRL	20.5	13.4	20.5

REMARKS: Currently, Russia has developed and is testing 122-mm rockets with various warheads (Frag-HE, AT/AP mines, jammers, and sensor-fuzed munitions) achieving firing ranges between 32-35 kilometers. These rockets could be deployed within the next 2-5 years.

Advanced Artillery Munitions: Laser-Guided Projectiles

NAME	COUNTRY	CALIBER	WEIGHT (kg)	LENGTH (mm)	TYPE WARHEAD	GUIDANCE SYSTEM	TARGET DESIGNATION RANGE (km) ⁽¹⁾	RANGE (km) MIN MAX		STATUS / PROLIFERATION
BUSSARD	Germany	120-mm mortar	17	1,050	Tandem (precursor and main charge); 800+ mm RHA penetration	IR Focal plane array (3-5μ terminal homing), semi-active laser homing (SAL-1.06μ)	3-5	.8	12	Developmental
Terminally Guided Mortar Bomb	Ukraine /Poland	120-mm mortar	18	1,200 (+)	HEAT; 550-mm RHA	SAL (1.06μ)	3-5	.5	7	Testing
Kitlov-2	Russia	120-mm mortar, combo gun	25	1,220	Frag-HE	SAL (1.06μ)	3-5	.5	9	Limited production/ 1 country
Smel'chak	Russia	240-mm mortar	134	1,635	Frag-HE	SAL (1.06μ)	3-5	3.6	9.2	Limited production/ 1 country
Kitlov-2M (KM-3)	Russia	122-mm howitzer	27	1,225	Frag-HE	SAL (1.06μ)	3-5	.8	14	Limited production/ 2 countries
Krasnopol	Russia	152-mm howitzer	51	1,300	Frag-HE, 6.5 kg AL/RDX	Inertial (middle stage of flight) SAL (final stage of flight)	3-5	5	20	Full production/ 14 countries
Krasnopol-M (KM-2)	Russia	155-mm howitzer	43.0	955	Frag-HE, 6.2 kg AL/RDX	Inertial (middle stage of flight) SAL (final stage of flight)	3-5	4	17	Full production/ 2 countries
Santimeter-1	Russia	152-mm howitzer	49.5	1,195	Frag-HE, 6.5 kg AL/RDX	SAL (1.06μ)	3-5	3	18	Limited production/ 3 countries
Aurora	Russia	152-mm howitzer	47 (+)	955	Frag-HE, 12.0 kg AL/RDX	SAL (1.06μ)	3-5	5	25	Ready for production, waiting for export customer
Ugroza ⁽²⁾	Russia	122-mm rocket	65.5 (est.)	3,037 (est.)	Tandem HEAT dual main charge; 600-mm penetration	SAL (1.06μ)	3-5	1	20-32	Limited production/ 2 countries
Copperhead	United States	155-mm cannon	62	1,370	HEAT	Inertial (middle stage of flight) SAL (final stage of flight)	3-5	4	16	Production complete/1 country

NOTES:

(1) The Target Designation Range column portrays an engagement of a tank size target moving at 10-15 km/h.

(2) The Ugroza's range is dependent upon the warhead being fitted on a rocket body containing either an older rocket motor (20 km) or new rocket motor (32 km).

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Foreign Course Corrected Rocket Programs

NAME	COUNTRY	CALIBER (mm)	WEIGHT (kg)	LENGTH (mm)	WARHEAD TYPE	GUIDANCE SYSTEM	ACCURACY (CEP, m)	RANGE (km)	STATUS/ PROLIFERATION
9M55-series	Russia	300	~800	7,200	Varies - ICM, SFM, HE, thermo- baric, scatterable mines	Inertial	150 @ max range (0.21% of range)	70	Fielded 2 countries
9M5xx- series	Russia	300	~800	7,200	Varies - ICM, DPICM, SFM, HE, thermobaric, scattererable mines	Inertial	171@ maximum range (.19% of range)	90	Production/ Ex- ported, 2 countries
AccuLAR	Israel/Romania	160	120	3,700	DPICM, SFM	RF Ground Track	90-135	45	Late development IOC 2003
MLRS-TCS	Israel	227	308	3,940	DPICM SFM	RF Ground Track	70-120	32	Late development IOC 2001
Angel-100	China	300	~800	7,200	Varies - ICM, SFM, HE	Inertial	210 @ max range (0.21% of range)	100	Development IOC 2005-7
CORECT	Switzerland- Germany	227	308	3,940	DPICM, AT-4 mines	GPS+Inertial and magnetometer	50 (independent of range)	32	Late development IOC 2003-5
MARS- NAW	Germany	227	308	3,940	DPICM, SMArt-155	GPS+Inertial	50	65-70	Late development IOC 2003-2005
LT-2000 Mk45	Taiwan	227	308	3,940	DPICM	GPS+Inertial	50	75	Development IOC 2008
Diehl RM- 70 Upgrade	Germany, France, Slovakia	122	77	3,220	DPICM, Multimode (HEAT, HE, Incendiary)	GPS+Inertial	50	36	Development IOC2008

Other countries with course corrected rocket development programs: Indonesia, South Africa, India, Ukraine, Brazil, Iraq.

Foreign Course Corrected Projectile Programs

NAME	COUNTRY	CALIBER (mm)	WEIGHT (kg)	LENGTH (mm)	WARHEAD TYPE	GUIDANCE SYSTEM	ACCURACY (CEP, m)	RANGE (km)	STATUS/ PROLIFERATION
TCM	Sweden	155	47	955	Varies (DPICM, SFM, HE)	Inertial+GPS	50-70	60	Development IOC 2006
Diehl GPS Geschoss	Germany	155	47	955	Varies (DPICM, SFM, HE)	Inertial+GPS	10	40	Development IOC 2003-5
Poleaxe	UK	155	54	1,650	DPICM, SFM	Inertial+GPS	50	80	Development IOC 2014
Pelican	France	155	50	1,350	DPICM, HE, SFM	Inertial+GPS	50-80	80	Development IOC 2014
BWB GPS Fin-stabilized	Germany	155	55	1,650	DPICM, SFM, HE	Inertial+GPS	20-50	100	Development IOC 2012
Ramjet Projectile	Holland-Sweden	155	55	1,500	DPICM, SFM	GPS+Inertial	20-50	80	Research IOC 2018
BROMSA	Sweden	105/155	Fuze	N/A	Any Projectile	GPS or MVV RF tracker	2-4X improvement over ballistic projectiles	25-30	Development IOC 2007
SAMPRASS	France	105/155	Fuze	N/A	Any Projectile	GPS	2-6X improvement over ballistic projectile	25-40	Development IOC 2005-7
STAR	UK	105/155	Fuze	N/A	Any Projectile	GPS	2-6X improvement over	25-40	Development

NAME	COUNTRY	CALIBER (mm)	WEIGHT (kg)	LENGTH (mm)	WARHEAD TYPE	GUIDANCE SYSTEM	ACCURACY (CEP, m)	RANGE (km)	STATUS/ PROLIFERATION
							ballistic projectile		IOC 2005-7

Other countries with course corrected projectile development programs: Israel, South Africa, Ukraine, and others.

Advanced Artillery Munitions: Sensor-Fuzed Munitions

NAME	COUNTRY	CALIBER DELIVERY SYSTEM	TARGETING SENSOR	SEARCH ALTITUDE	ARMOR PENETRATION	TYPE WARHEAD	RANGE (km)	STATUS/ PROLIFERATION
BONUS	France/ Sweden	155-mm cannon	2-color IR sensor with laser altimeter	175	120-135-mm at 150 meter slant range	Tantalum EFP	27 (39-cal. cannon) 35 (52-cal. cannon)	Full Production
SMArt	Germany	155-mm cannon	94 Ghz MMW Sensor (Active and Passive), 3-5 μ IR sensor	150	135-mm RHA penetration @ 100 meters	Tantalum liner, COMP-B fill with unique waveshaper	25	Full Production
Indian Sensor Fuzed Munition	India	120-mm mortar 155-mm cannon	MMW	100 (est)	50-70-mm RHA penetration @ 100 meters	Copper penetrator	7	EIOC 2002-2003
Israeli Top-Attack Sensing Submunition	Israel	227-mm rocket	Ka-Band (Active and Passive)	100 (est)	100-mm RHA penetration @ 100 meters	Copper penetrator	32	Developmental
Meteor	Poland	122-mm rocket	2 color IR sensor with laser diode altimeter	150	80-100-mm RHA penetration @ 100 meters	Copper penetrator	30	EIOC 2003
Motiv-3M	Russia	300-mm rocket	2 color IR sensor	100 (est)	70-mm RHA pene- tration @ 150 me- ters and 30°	Copper penetrator, Ball slug	90	Full Production
Universal Submunition	Russia	120-mm mortar, 122-mm, 220-mm, and 300-mm rockets	W-band MMW Sensor (Active and Passive), 1-2 μ and 8-14 μ IR sensor	100 (est)	60-70-mm RHA penetration @ 100 meters and 30°	Copper penetrator, Ball slug	33 (122-mm) 35 (220-mm) 90 (300-mm)	Limited Production
MCS-E1	Russia	152-mm cannon	35 Ghz MMW (Active), 3-5 μ IR sensor	100 (est)	90-mm RHA pene- tration	Copper penetrator, Ball slug	24	EIOC 2003-2004
MCS-E2, 152-mm	Russia	152-mm cannon	W-band MMW Sensor (Active and Passive), 1-2 μ and 8-14 μ IR sensor	150 (est)	80-mm RHA pene- tration @ 125 me- ters and 30°	Copper penetrator, Ball slug	20	Developmental, EIOC 2007-2008
MCS-E2, 155-mm	Russia	155-mm cannon	W-band MMW Sensor (Active and Passive), 1-2 μ and 8-14 μ IR sensor	150 (est)	80-mm RHA pene- tration @ 125 me- ters and 30°	Copper penetrator, Ball slug	25	Developmental, EIOC 2007-2008
SADARM	US	155-mm cannon	35 Ghz MMW Sensor (Active and Passive), 8-14 μ IR sensor	130 (est) 165 (est) P3I	135-mm RHA penetration @ 100 meters	INA	24	Limited Production

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